

# MOLECULAR FEATURES OF ORGANIC MATTER IN DIAGNOSTIC HORIZONS FROM ANDOSOLS. A COMPARATIVE STUDY OF WHOLE AND DEMINERALIZED SOILS

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Soils in the Midlands slopes of the Tenerife Island (Canary Islands) are mainly allophanic andosols that sustain Canary pine forest-type vegetation. Andosols are usually formed from volcanic substrates, having a typical A horizon (melanic epipedon) that accumulates high quantities of organic carbon (80-300 g C/kg) mainly due to the stabilisation by mineral interactions<sup>1</sup>. The peculiar properties of these variable-charge soils are due to the occurrence of materials such as allophanes, imogolite and other Fe and Al oxyhydroxides prone to form intense organo-mineral interactions and structures with a high degree of stability that contribute to an efficient protection of organic C<sup>1</sup>.

This work complements previous results using analytical desorption/pyrolysis to elucidate soil organic matter structure in andosols<sup>2</sup>. In order to further enlighten soil organic matter (SOM) molecular composition and its relation with the soil mineral matrix, the results from a comparative study is described here where whole soil and hydrofluoric acid (HF) demineralised<sup>3</sup> soil samples were analysed by complementary techniques; solid state NMR spectroscopy (CP-MAS <sup>13</sup>C-NMR) and analytical pyrolysis (Py-GC/MS). The samples studied were from the organic A horizons of three soils with andic properties and one non-andic soil (Sodic Cambisol) from the island of Tenerife (Canary Islands, Spain). New entrapped organic structures were amenable to analytical pyrolysis and <sup>13</sup>C-NMR spectra were considerably ameliorated when minerals, including paramagnetic components, were removed. Our findings support previous ones suggesting the occurrence of high-performance organo-mineral sequestration mechanisms of aliphatic moieties in andosols<sup>2</sup>.

## References

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